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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,582	03/10/2004	Jian-Ku Shang	ILL09-029-US	4720
43320                      7590                      04/30/2009 EVAN LAW GROUP LLC 600 WEST JACKSON BLVD., SUITE 625 CHICAGO, IL 60661				
EXAMINER				
GRAY, JILL M				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/797,582

**Applicant(s)**

SHANG ET AL.

**Examiner**

Jill Gray

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 28-31, 33, 34 and 45-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-31, 33, 34 and 45-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date 10/10/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

Prior art reference Thierauf et al., US 2006/0099397 A1 and US 2006/0078712 is A1 is withdrawn in view of applicants' arguments.

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 28-31, 33-34, 45-49, and 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai et al., 6,680,279 B2 (Cai) in view of Sowards et al., 3,518,206 (Sowards).

#### **Regarding claims 28-29, 31, 33-34, 45-49, and 51-54**

Cai discloses ceramic coated fibers (per claims 28, 46) comprising

(a) a fiber, (column 3, lines 5-7) and

(b) ceramic coated on the fiber, wherein the ceramic has a large surface area, such as a BET surface area of 150 m<sup>2</sup>/g (see Example 1), wherein the ceramic comprises at least one member selected from the ceramics listed, including Al<sub>2</sub>O<sub>3</sub> (per claims 1, 48); (see column 4, lines 8-10, column 6, lines 60-66, Figure 1, and column 7, lines 4-7 and 58-60).

Cai further discloses the inclusion of other metals such as palladium (per claims 31, 51) (see column 3, lines 55-56).

Cai does not specifically teach a BET surface area of at least 200 m<sup>2</sup>/g as required by claims 1 and 46 or the specific BET surface area ranges of claims 29, 33-

34, 45, 49, and 52-54. Cai also does not disclose  $\text{TiO}_2$  required by claim 47 or the amount of ceramic by weight of the ceramic coated fiber required by claims 30 and 50.

Regarding the BET surface area

Sowards teaches catalyst substrates or supports such as rods, tubes and tube bundles having a low surface area coated with highly active catalyst coatings of high specific surface areas (see abstract, column 1, lines 54-59.) The highly active catalysts coatings can include porous materials such as alumina ( $\text{Al}_2\text{O}_3$ ), titania, zirconia and magnesia (per claims 28, and 47-48); (see column 7, lines 9-13 and 30-59). Sowards additionally teaches that the  $\text{Al}_2\text{O}_3$  can have a BET surface area of approximately 160  $\text{m}^2/\text{g}$  and 325  $\text{m}^2/\text{g}$ . (see Examples 2 and 3).

Cai and Sowards are each drawn to the formation of supported catalyst systems comprising porous particles applied to a support or substrate, wherein the particles desirably have high surface areas. Note Cai, col. 4, line 5, and Example 1; Sowards, Examples 2 and 3. Accordingly, Cai and Sowards are within the same field of endeavor and thus are analogous art.

The prior art clearly establishes that fibers coated with high surface area ceramics (Cai) and that said ceramics having a BET surface area of at least 200  $\text{m}^2/\text{g}$  (Sowards) are known. The fact that Sowards teaches  $\text{Al}_2\text{O}_3$  having a BET of 325  $\text{m}^2/\text{g}$  applied to a substrate and his additional teaching that this substrate could be rods, tubes or tube bundles, would have suggested to the skilled artisan at the time the invention was made that high surface area ceramics having a BET of at least 200  $\text{m}^2/\text{g}$ , (as required by claims 28-29, 33-34, 46, 49, and 52-53) would have been suitable in

forming a catalyst material as taught by Cai, wherein said high surface area ceramic is coated onto a fiber, with the reasonable expectation of increased catalytic activity. Moreover, the skilled artisan would have reasonably presumed that ceramics having a surface area of at least 500 m<sup>2</sup>/g, per claims 45 and 54, would have also functioned with a reasonable expectation of success of increased catalytic activity in the resultant coated fibrous support. Therefore, it would have been obvious to one having ordinary skill in the art to modify the teachings of Cai by using as his ceramic coating a ceramic with a large surface area of at least 200 m<sup>2</sup>/g, such as the Al<sub>2</sub>O<sub>3</sub> having a BET surface area of 325 m<sup>2</sup>/g, as taught by Sowards. "It is well settled that a patent cannot be granted for an applicants' discovery of a result even though it may be unexpected good, which would flow logically from the teaching of the prior art." *In re Rau*, 117 USPQ 215 (CCPA 1958).

Regarding TiO<sub>2</sub> (claim 47)

Sowards teaches that alumina, titania, zirconia and magnesia are suitable granular porous materials, (see column 7, lines 30-31) thus establishing them as equivalents. It would have been obvious to one having ordinary skill in the art to modify the teaching of Cai, by using TiO<sub>2</sub> as the ceramic coating instead of Al<sub>2</sub>O<sub>3</sub>, motivated by the ability to produce catalyst materials having increased catalytic activity. See MPEP 2144.06.

Regarding claims 30 and 50

It is the examiner's position that since the result sought and the ingredients used were known, it was within the expected skills of one having ordinary skill in this art to

arrive at the optimum proportion of ceramic coating by weight of the ceramic coated fiber, and any improved results alleged by applicants would have resulted from experimentation of an obvious nature, and were nothing more than what one would have expected. *In re Reese*, 129 USPQ 402 (CCPA 1961).

***Response to Arguments***

3. Applicant's arguments filed December 16, 2008 have been fully considered but they are not persuasive.

Applicants argue that Cai describes the coating of ceramic fibers with alumina particles, however is silent as to whether the ceramic fibers are ceramic coated fibers.

In response thereto, it is the position of the examiner that Cai discloses that his fibers are coated with  $Al_2O_3$ . This material of the same type as that claimed by applicants in the present claims. Therefore, the examiner has reason to believe that the coating applied to the fibers of Cai is ceramic, since the same compounds necessarily have the same properties. There is no clear factual evidence on this record that the coating of Cai, which comprises the same component as applicants, is not in fact ceramic.

Applicants argue that Sowards is silent regarding ceramic coated fibers.

As set forth above, Sowards teaches that his coating can be coated on substrates such as rods, tube, and tube bundles. This teaching would have provided a suggestion to the skilled artisan that his coating would have been suitable as a coating on a fiber substrate.

Applicants argue that Cai and Sowards neither disclose nor suggest ceramic coated fibers, and that Cai is so distinct from Sowards as to render the two references incompatible, because the references disclose different processes suited to the production of different types of materials.

In response applicants' argument that Cai and Sowards neither disclose nor suggest ceramic coated fibers, the examiner's position is as set forth above and incorporated herein. Regarding the process of Cai and Sowards, the prior art references each teach processes that are directed to the application of a high surface area ceramic material to a substrate, wherein the end product is a ceramic coated fiber or rod or tube or tube bundle. "The test for obviousness is not whether the features of one reference may be bodily incorporated into the other to produce the claimed subject matter but simply what the combination of references makes obvious to one of ordinary skill in the pertinent art. *In re Bozek*, 163 USPQ 545 (CCPA 1969). In the instant case, the collective teachings of the prior art would have suggested a ceramic coated fiber, comprising a fiber and ceramic coated on said fiber, wherein the ceramic is of the type contemplated by applicants, and has the requisite BET surface area.

Applicants Declaration under 35 U.S.C. 131 has been considered and appears to be proper to establish a date of conception prior to November 15, 2003.

No claims are allowed.

#### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill Gray whose telephone number is 571-272-1524. The examiner can normally be reached on M-Th and alternate Fridays 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill Gray/  
Primary Examiner  
Art Unit 1794

jmg